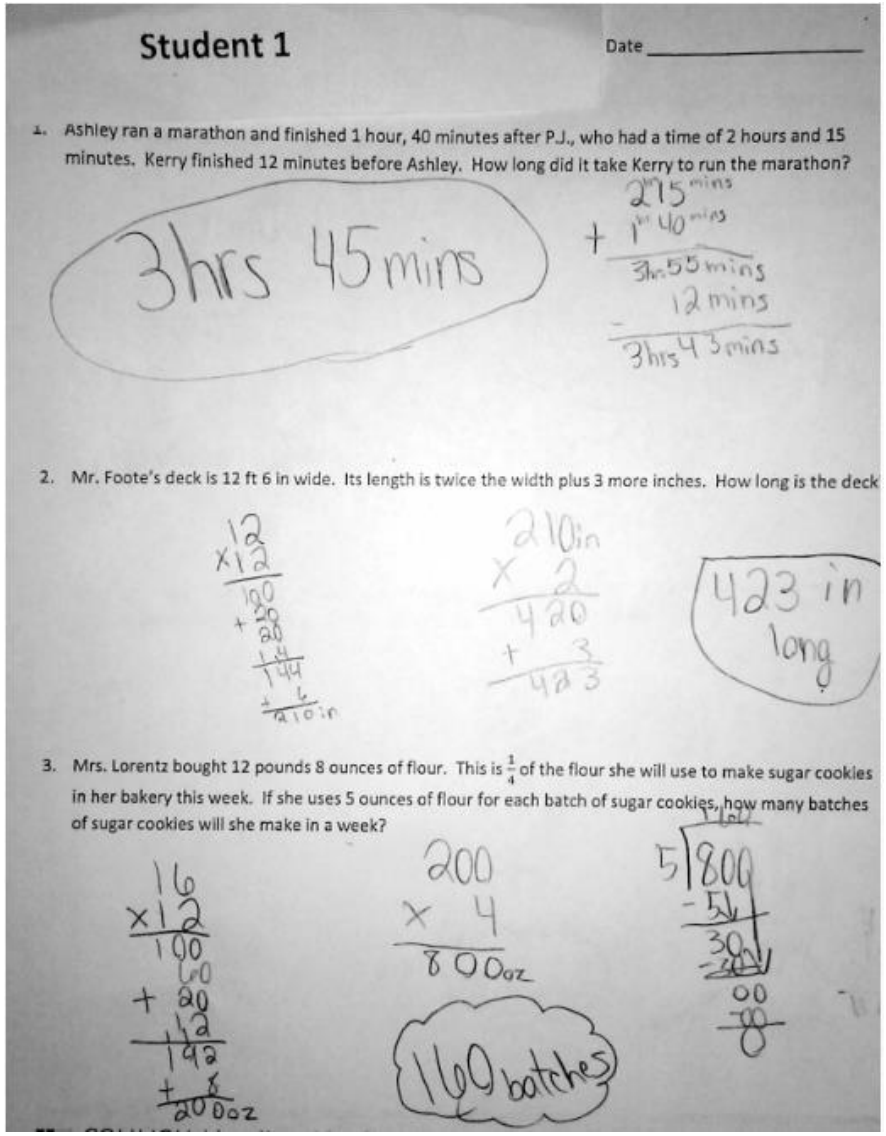
Module 1: Section 1D: A Closer Look at the Standards for Mathematical Content: Fourth Grade Sample Tasks

Task 1:



Student 1 Date _____

1. Ashley ran a marathon and finished 1 hour, 40 minutes after P.J., who had a time of 2 hours and 15 minutes. Kerry finished 12 minutes before Ashley. How long did it take Kerry to run the marathon?

3hrs 45mins

215 mins
+ 1hr 40 mins
3hr 55 mins
− 12 mins
3hrs 43 mins

2. Mr. Foote's deck is 12 ft 6 in wide. Its length is twice the width plus 3 more inches. How long is the deck

12 × 12
100 + 20 + 20 + 4 = 144
144 + 6 = 210 in

210in × 2
420 + 3 = 423

423 in long

3. Mrs. Lorentz bought 12 pounds 8 ounces of flour. This is $\frac{1}{4}$ of the flour she will use to make sugar cookies in her bakery this week. If she uses 5 ounces of flour for each batch of sugar cookies, how many batches of sugar cookies will she make in a week?

16 × 12
100 + 60 + 20 + 12 = 192
192 + 8 = 200oz

200 × 4
800oz

160 batches

5 | 800
−5
30
−30
00
−00
0

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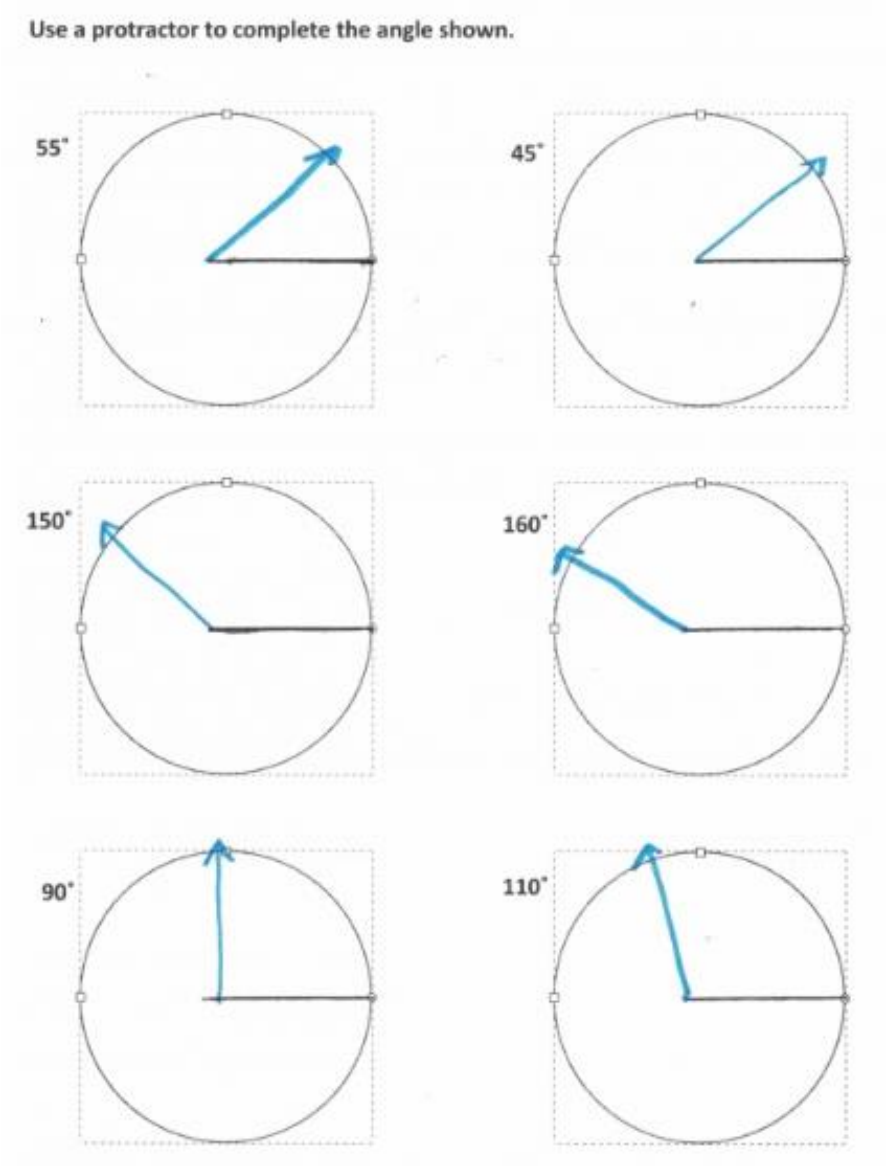
Task 2:



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Task 3:

Name _____

Directions: Use addition, subtraction, multiplication, or division to solve each problem.

1. Kristen was shopping with her friend Carrie. All together, Kristen spent 55 dollars on 11 shirts. If each shirt was the same price, how much did each shirt cost?

   55 ÷ 11 = 5 dollars

2. David was playing his favorite video game. Each week, he spent 9 hours playing the game. How many hours would he have spent playing the game after 6 weeks?

   9 x 6 = 54 hours

3. Oscar is giving a high five to every student that enters the classroom. There are 19 students in line to enter the classroom. He gives the first 4 students a high five. How many more high fives will he have to give?

   19 - 4 = 15 high fives

4. Layla is painting a picture for each of the 7 members of her family. It takes her 8 minutes to paint each picture. How long will it take Layla to paint all of the pictures?

   7 x 8 = 56 minutes

5. Tami bought 4 boxes of fruit snacks at the grocery store. If each box has 7 packs of snacks, how many packs of snacks did she buy altogether?

   4 x 7 = 28 packs

6. Ms. Alvarez was collecting all of her students' tests at the end of the school day. She collected 11 tests. There are 18 students in her class. How many more tests does she have to collect?

   18 - 11 = 7 tests

7. Joy was creating origami in her free time. Before school, she created 4 origami boxes. After school, she created 9 more. How many origami boxes did she create all together?

   4 + 9 = 13 boxes

8. A delivery person is making stops to deliver packages. At each stop, he delivers 4 packages. If he delivers 24 packages in all, how many stops did he make?

   24 ÷ 4 = 6 stops

9. The librarian is putting away books that have been left out in the library. There are 36 books that need to be put back on shelves. Each shelf can hold 12 books. How many shelves will it take to fit all of the books?

   36 ÷ 12 = 3 shelves

10. In one school year, a class of students visits the computer lab 20 times. If they visit the lab 12 times in the first semester, how many times do they visit in the second semester?

    20 - 12 = 8 times

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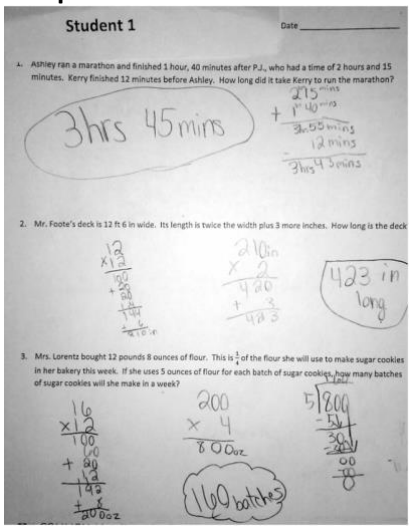
Module 1: Section 1D: A Closer Look at the Standards for Mathematical Content: Fourth Grade Sample Tasks

Participant Guide

Student Work Sample	Standard of Mathematical Content Focus	Degree of Alignment	Standards of Mathematical Practice (SMP) Focus
Sample Task 1:  Student 1 Date 1. Ashley ran a marathon and finished 1 hour, 40 minutes after P.J., who had a time of 2 hours and 15 minutes. Kerry finished 12 minutes before Ashley. How long did it take Kerry to run the marathon? 3hrs 45mins 2. Mr. Foote's deck is 12 ft 6 in wide. Its length is twice the width plus 3 more inches. How long is the deck 423 in long 3. Mrs. Lorentz bought 12 pounds 8 ounces of flour. This is $\frac{1}{4}$ of the flour she will use to make sugar cookies in her bakery this week. If she uses 5 ounces of flour for each batch of sugar cookies, how many batches of sugar cookies will she make in a week? 160 batches	Can you identify the targeted content standard(s) for this task?	• None/Weak • Partial • Strong	Can you identify the targeted practice standard(s) for this task?

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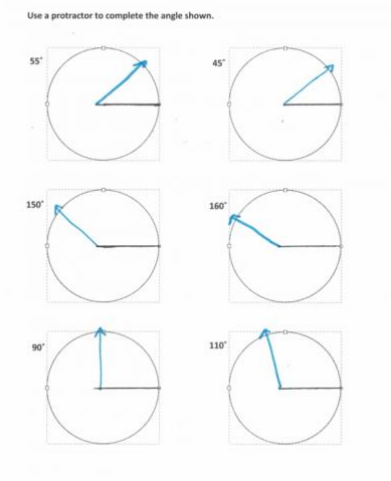
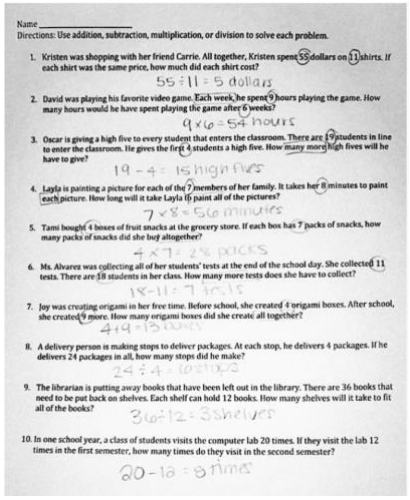
Student Work Sample	Standard of Mathematical Content Focus	Degree of Alignment	Standards of Mathematical Practice (SMP) Focus
Sample Task 2:  	Can you identify the targeted content standard(s) for this task?	• None/Weak • Partial • Strong	Can you identify the targeted practice standard(s) for this task?
Sample Task 3:  Name _____ Directions: Use addition, subtraction, multiplication, or division to solve each problem. 1. Kristen was shopping with her friend Carrie. All together, Kristen spent 55 dollars on 11 shirts. If each shirt was the same price, how much did each shirt cost? 55 ÷ 11 = 5 dollars 2. David was playing his favorite video game. Each week, he spent 9 hours playing the game. How many hours would he have spent playing the game after 6 weeks? 9 × 6 = 54 hours 3. Oscar is giving a high five to every student that enters the classroom. There are 19 students in line to enter the classroom. He gives the first 4 students a high five. How many more high fives will he have to give? 19 - 4 = 15 high fives 4. Layla is painting a picture for each of the 7 members of her family. It takes her 8 minutes to paint each picture. How long will it take Layla to paint all of the pictures? 7 × 8 = 56 minutes 5. Tami bought 4 boxes of fruit snacks at the grocery store. If each box has 7 packs of snacks, how many packs of snacks did she buy altogether? 4 × 7 = 28 packs 6. Ms. Alvarez was collecting all of her students' tests at the end of the school day. She collected 11 tests. There are 18 students in her class. How many more tests does she have to collect? 18 - 11 = 7 tests 7. Joy was creating origami in her free time. Before school, she created 4 origami boxes. After school, she created 9 more. How many origami boxes did she create all together? 4 + 9 = 13 boxes 8. A delivery person is making stops to deliver packages. At each stop, he delivers 4 packages. If he delivers 24 packages in all, how many stops did he make? 24 ÷ 4 = 6 stops 9. The librarian is putting away books that have been left out in the library. There are 36 books that need to be put back on shelves. Each shelf can hold 12 books. How many shelves will it take to fit all of the books? 36 ÷ 12 = 3 shelves 10. In one school year, a class of students visits the computer lab 20 times. If they visit the lab 12 times in the first semester, how many times do they visit in the second semester? 20 - 12 = 8 times	Can you identify the targeted content standard(s) for this task?	• None/Weak • Partial • Strong	Can you identify the targeted practice standard(s) for this task?

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Facilitator's Guide

Throughout facilitation of this activity it will be important to remind participants:

- Use the grade-level overview to determine the relevant cluster(s) to look at more closely
- Questions regarding Standards for Mathematical Practices will only be indicated where specific practices were identified within the source of the task alignment. Additionally, emphasize to participants the statement at the end of each cluster within the *KAS for Mathematics*, "The identified mathematical practices, coherence connections, and clarifications are possible suggestions; however, they are not the only pathways."

Sample Task 1:

This assignment is strongly aligned to the standards.

Overview

Fourth-grade students solve multistep word problems involving measurement quantities. This assignment is strong because it requires students to interpret real-world scenarios and represent and solve them mathematically, while giving students continued practice with grade-level operations with whole numbers and fractions.

Related Standards

We looked at how well the assignment aligned to the following standards:

KY.4.MD.2: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects and money.

a. Solve measurement problems involving whole number, simple fractions or decimals.

b. Solve problems that require converting a given measurement from a larger unit to a smaller unit within a common measurement system, such as 2 km = 2,000 m.

c. Visually display measurement quantities using representations such as number lines that feature a measurement scale.

Why is this assignment strongly aligned?

This assignment is well-aligned with fourth-grade standard KY.4.MD.2. The standard requires that students solve word problems involving measurement quantities, and the three problems in this assignment are word problems about time, length, and weight. The standard also requires that students represent measurement quantities using scaled diagrams. The companion lesson for this assignment used tape diagrams to represent problems, and the directions for this assignment (not pictured) prompted students to read, draw, and write to solve each problem.

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All three problems in this assignment involve other fourth grade standards as well, including multiplying two-digit by two-digit numbers (standard KY.4.NBT.5), dividing with one-digit divisors and up to four-digit dividends (standard KY.4.NBT.6), solving word problems involving multiplicative comparison (standard KY.4.OA.2) and multiple steps (standard KY.4.OA.3).

This assignment builds students' application skills which is appropriate for standard KY.4.MD.2. The standard calls for students to solve word problems involving measurement, and all three problems in this assignment are word problems that involve real-world situations. The standard also indirectly targets students' conceptual understanding of the size of and relationship between different measurement units (such as inches and feet) since it requires students to represent measurement quantities using scaled diagrams, and the directions for this assignment (not pictured) ask students to create a drawing for each problem.

Practice Standards

This assignment allows students to engage with two mathematical practice standards. Interpreting what the word problems are asking them to do gives students the chance to engage with Mathematical Practice Standard #1 ("Make sense of problems and persevere in solving them"). The directions for the assignment (not pictured) also ask students to create drawings to represent each real-world scenario, which gives students the chance to engage with Mathematical Practice Standard #4 ("Model with mathematics").

Sample Task 2:

This assignment is partially aligned to the standards.

Overview

Fourth-grade students use protractors to draw angles of given measures. This assignment is partially aligned with a fourth-grade standard because students don't draw the entire angle themselves or draw angles to a single degree.

Related Standards

We looked at how well the assignment aligned to the following standard:

KY.4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

Why is this assignment partially aligned?

This assignment is partially aligned to fourth-grade standard KY.4.MD.6. The standard requires that students draw angles of a given measure and this assignment involves drawing six angles in multiples of five degrees (for example, 45˚ or 110˚). Fourth-graders should also be tasked with drawing angles to a single degree (for example, 47˚ or 113˚).

This standard targets both conceptual understanding and procedural skill. This assignment allows students to build procedural skill through multiple opportunities to practice using a protractor to draw angles of given measures. Students must use the tool correctly (for example, aligning the provided

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horizontal ray for each angle with the zero mark on the protractor) to accurately draw the angles. However, the assignment does not build students' conceptual understanding about angles and angle measurement because it only exposes students to one angle orientation and students need to be exposed to varied angle orientations to avoid developing inaccurate understandings. For example, if the angles are always presented with a horizontal ray, students may come to believe that all angles can be read off of a protractor in "standard" position (i.e., with a horizontal base) even when neither arm of an angle is horizontal. To help students build an accurate understanding, they should also measure and draw angles with no horizontal or vertical arms.

Practice Standards

This assignment allows students to superficially engage with Mathematical Practice Standard #5 ("Use appropriate tools strategically"). Students repeatedly practice using a protractor to draw angles of given measures, but they don't draw the entire angle themselves. The assignment provides one horizontal ray for each angle, so students can't demonstrate independent proficiency with protractors.

Sample Task 3:

This assignment is weakly aligned to the standards.

Overview

Fourth-grade students solve ten word problems involving all four operations. This assignment is weak because the problems are most closely aligned with first-grade and third-grade standards.

Related Standards

We looked at how well the assignment aligned to the following standard:

KY.4.OA.3 Solve multistep problems.

a. Perform operations in the conventional order when there are no parentheses to specify a particular order.

b. Solve multistep word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computations and estimation strategies including rounding.

Why is this assignment weakly aligned?

This assignment is most closely aligned with first-grade standard KY.1.OA.A.1 (solving addition and subtraction word problems within 20) and third-grade standard KY.3.OA.A.3 (solving multiplication and division word problems within 100). In fourth grade, students should be solving multi step word problems involving all four operations (standard KY.4.OA.A.3), but none of the problems in this assignment are multistep.

Though the fourth-grade standard KY.4.OA.A.3 does not specify what types of numbers students should be working with, other fourth grade standards include fluently adding and subtracting multi-digit numbers using an algorithm (standard KY.4.NBT.B.4), multiplying one-digit numbers by up to four-digit numbers and two-digit numbers by two-digit numbers (standard KY.4.NBT.B.5), and dividing with one-digit divisors and up to four-digit dividends, including Please note that inclusion of these sample tasks does not represent that this task is endorsed by or rejected by the Kentucky Department of Education. Inclusion of these tasks was for the sole purpose of allowing participants the opportunity to investigate the content standards within the *Kentucky Academic Standards for Mathematics* more closely. All tasks were selected from https://tntp.org/student-work-library.

quotients with remainders (standard KY.4.NBT.B.6). None of the problems in this assignment involved the number types outlined in these fourth-grade standards.

Practice Standards

This assignment allows students to engage with Mathematical Practice Standard #1 ("Make sense of problems and persevere in solving them") by interpreting what operation was needed to solve each word problem. However, the level of interpretation was far below grade level, as standard KY.4.OA.A.3 requires multistep word problems involving all four operations and this assignment only included one-step word problems involving one operation.

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